Long-COVID's Neurological Symptoms

What is Long-COVID?

According to published estimates, approximately 25-30% of all people who contract COVID-19 have prolonged symptoms that last longer than two months, and at least 15% have symptoms that last 8 months or longer. For those who have severe COVID requiring hospitalization, the percentages are much higher. "Long-COVID" is the term used to describe a wide array of lingering sequelae from COVID-19, which include symptoms like fatigue, body aches, shortness of breath, headaches, and brain fog.[1,2]

Does Long-COVID Include Neurological Symptoms?

Several recent studies have shown patients with long-COVID face persistent neurological symptoms.

- In a study published March 2021 in the *Annals of Clinical and Translational Neurology*, researchers found that 85% of 100 non-hospitalized long-COVID patients experienced four or more neurologic symptoms more than six weeks after their infection. The most common symptom was "brain fog," experienced by 81% of the participants.[3]
- There have also been studies showing persistent cognitive and mental impairment, particularly among women, including anxiety, depression, and post-traumatic stress disorder.[4,5]
- A recent study of over 230,000 electronic health records found that one-third of those who had COVID-19 developed a "brain disorder" such as anxiety, mood disorder, and, in some circumstances, stroke.[6,7] Of note, the most common diagnosis in this study was anxiety (found in 17% of patients), followed by mood disorders (found in 14%).

What Is Being Done to Better Understand the Neurological Impacts of Long-COVID?

In the U.S., the National Institutes of Health's (NIH's) National Institute of Neurological Disorders and Stroke launched a new database and biobank, the NeuroCOVID Project, to collect information from providers regarding the neurological symptoms associated with their COVID-19 patients.[8]

> "We know that COVID-19 can disrupt multiple body systems but the effects of the virus and the body's response to COVID-19 infection on the brain, spinal cord, nerves, and muscle can be particularly devastating, and contribute to persistence of disability even after the virus is cleared." **– Barbara Karp, MD**
> *Program director at the NIH's National Institute of Neurological Disorders and Stroke*

Survivor Corps, a patient advocacy group for those with long-COVID, worked with several respected research institutions to conduct a study using 5,000 self-reported long-COVID patients. While the results from the study are not yet peer-reviewed and are based on a convenience sample, initial findings suggest that more than half of respondents had prolonged difficulty concentrating and more than a third experienced long-term memory problems and dizziness.[9]

Physicians at medical centers including Mayo Clinic, Yale, and Johns Hopkins are referring patients to cognitive rehabilitation clinics that are more typically used for patients with concussions and other traumatic brain injuries.[10] In these clinics, physicians have been performing cognitive screenings among patients post-COVID to determine if special treatment is needed. Once the need for treatment is identified, physicians conduct more in-depth neuropsychological exams and refer patients to cognitive rehabilitation therapy, which involves meeting with neuropsychologists, rehabilitation psychologists, speech language therapists, and psychiatrists, depending on a patient's needs.

Work is underway beyond the U.S., as well. In April 2020, the European Academy of Neurology (EAN) set up the EANcore NeuroCOVID-19 task force to collect information and develop resources for neurologists.[11] In May 2020, the Environmental Neurology Specialty Group of the World Federation of Neurology (WFN) decided to take on the initiative to collect all data from national and international registries to assist with streamlining the data collection.

The COVID Patient Recovery Alliance is a multi-sector group of organizations whose mission is to define, develop, and assist in implementing a national strategy to characterize, diagnose, ensure care for, and sustainably fund the full recovery of individuals with long-COVID. To address these neurological and other consequences of COVID-19, the Alliance is developing national solutions that link diverse data sources, inform the development of models of care, and ensure adequate payment for the care and full recovery of these patients.

Research is underway to help understand long-COVID and the unique challenges it presents for patients and the American health care system. Learn more at COVID19PatientRecovery.org.

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[1] https://health.ucdavis.edu/coronavirus/covid-19-information/covid-19-long-haulers.html
[2] https://www.nih.gov/about-nih/who-we-are/nih-director/statements/nih-launches-new-initiative-study-long-covid
[3] New Long Covid Treatments Borrow From Brain Rehab Tactics - WSJ
[4] Why Are Women More Likely To Suffer From Long Covid, According To Studies? (forbes.com)
[5] Physical, cognitive and mental health impacts of COVID-19 following hospitalisation – a multi-centre prospective cohort study | medRxiv
[6] 'Long haul' COVID: Doctor describes patients' 'crushing headaches,' 'cognitive symptoms' after recovery (msn.com)
[7] 6-month neurological and psychiatric outcomes in 236 379 survivors of COVID-19: a retrospective cohort study using electronic health records - The Lancet Psychiatry
[8] Collecting Data About COVID-19–Related Brain Symptoms | Neurology | JAMA | JAMA Network
[9] Inside the 'cyclone' of brain fog many COVID-19 long-haulers are still experiencing - ABC News (go.com)
[10] See 5.
[11] Long COVID: understanding the neurological effects - The Lancet Neurology